

IN THE CLAIMS

The following is a clean version of the entire set of pending claims. In accordance with 37 C.F.R. 1.121(c)(1)(ii), Attachment A provides a marked up version of the claims containing the amendments.

Please amend Claims 16, 19, and 21. Please cancel Claims 1-15. Please add new Claim 23-28.

1. (Cancelled)
2. (Cancelled)
3. (Cancelled)
4. (Cancelled)
5. (Cancelled)
6. (Cancelled)
7. (Cancelled)
8. (Cancelled)
9. (Cancelled)
10. (Cancelled)
11. (Cancelled)
12. (Cancelled)
13. (Cancelled)
14. (Cancelled)
15. (Cancelled)
16. (Amended) A quantum dot infrared photodetector structure comprising:  
a gallium arsenide substrate;  
a first gallium arsenide layer as a first buffer layer formed on said gallium arsenide substrate;

a first undoped  $\text{Al}_x\text{Ga}_{1-x}\text{As}$  layer as a blocking layer formed on said gallium arsenide layer;

a quantum dot structure layer comprising a plurality of stacked layers formed on said first undoped  $\text{Al}_x\text{Ga}_{1-x}\text{As}$  layer;

a second undoped  $\text{Al}_x\text{Ga}_{1-x}\text{As}$  layer as a second buffer layer formed on said quantum dot structure layer; and

a second gallium arsenide layer as a contact layer formed on said second undoped  $\text{Al}_x\text{Ga}_{1-x}\text{As}$  layer.

17. The structure according to claim 16, wherein said first gallium arsenide layer and said second gallium arsenide layer are n-type gallium arsenide layers.

18. The structure according to claim 16, wherein said quantum dot structure layer is formed by multiple layers comprising indium arsenide quantum dots formed under an arsenic deficient condition and buried in an undoped gallium arsenide barrier layer.

19. (Amended) The structure according to claim 16, wherein said quantum dot structure layer is made of one of silicon/silicon germanium composite and indium gallium arsenide/gallium arsenide composite.

20. The structure according to claim 18, wherein the number of said multiple layers is ranged from 3 to 100.

21. (Amended) The structure according to claim 16, wherein aluminum contents of said first  $\text{Al}_x\text{Ga}_{1-x}\text{As}$  layer and said second  $\text{Al}_x\text{Ga}_{1-x}\text{As}$  layer are ranged from 10% to 100% by atomic composition, respectively.

22. The structure according to claim 16, wherein said first gallium arsenide layer has a thickness of about 1  $\mu\text{m}$ .

23. (New) A quantum dot infrared photodetector structure comprising:

a gallium arsenide substrate;

a first gallium arsenide layer as a first buffer layer formed on said gallium arsenide substrate;

a first undoped aluminum gallium arsenide layer as a blocking layer formed on said gallium arsenide layer;

a quantum dot structure layer comprising a plurality of stacked layers formed on said first undoped aluminum gallium arsenide layer;

a second undoped aluminum gallium arsenide layer as a second buffer layer formed on said quantum dot structure layer; and

a second gallium arsenide layer as a contact layer formed on said second undoped aluminum gallium arsenide layer.

24. (New) The structure according to claim 23, wherein said first gallium arsenide layer and said second gallium arsenide layer are n-type gallium arsenide layers.

25. (New) The structure according to claim 23, wherein said quantum dot structure layer is formed by multiple layers comprising indium arsenide quantum dots formed under an arsenic deficient condition and buried in an undoped gallium arsenide barrier layer.

26. (New) The structure according to claim 23, wherein said quantum dot structure layer is made of one of silicon/silicon germanium composite and indium gallium arsenide/gallium arsenide composite.

27. (New) The structure according to claim 25, wherein the number of said multiple layers is ranged from 3 to 100.

28. (New) The structure according to claim 23, wherein said first gallium arsenide layer has a thickness of about 1  $\mu\text{m}$ .